Docket: 85095PCT

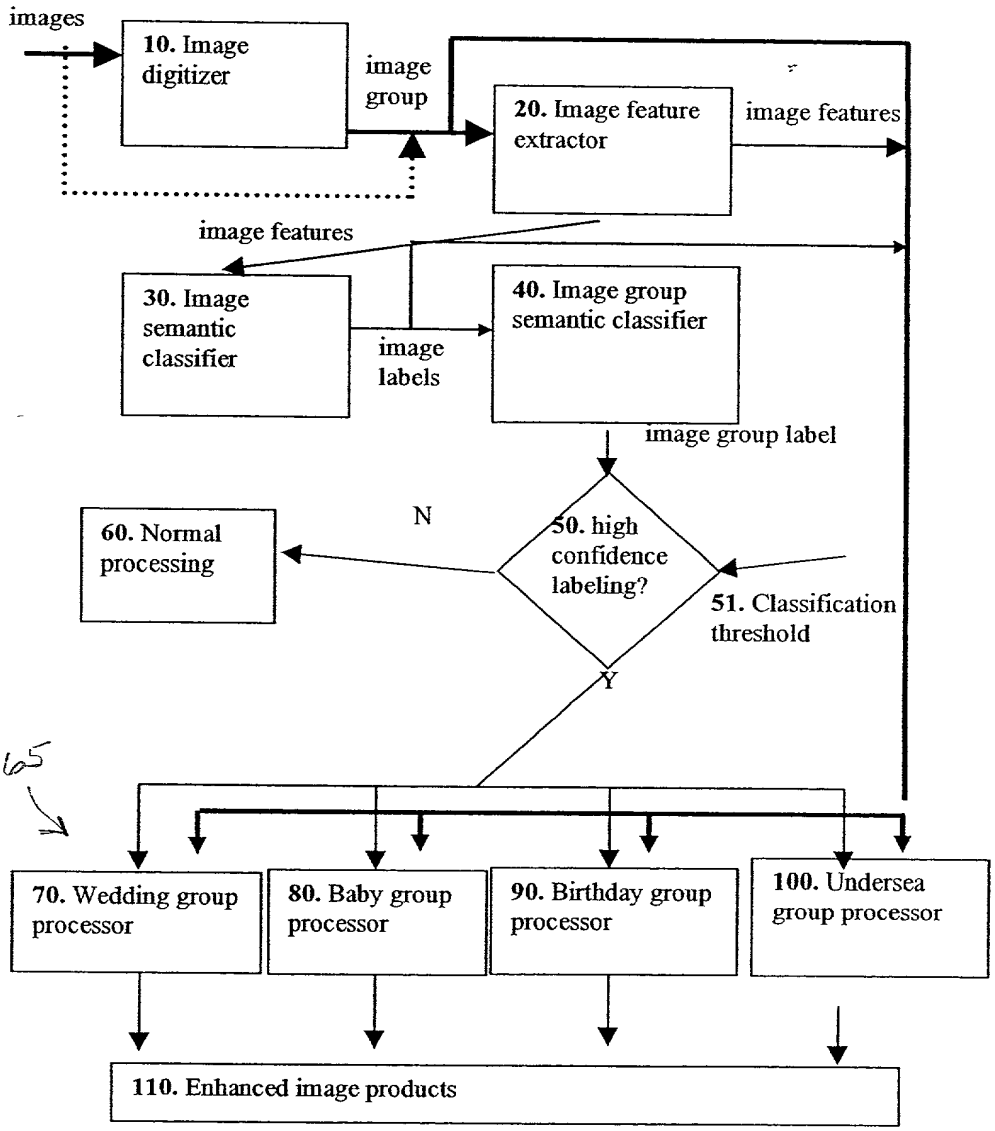


FIG. 1

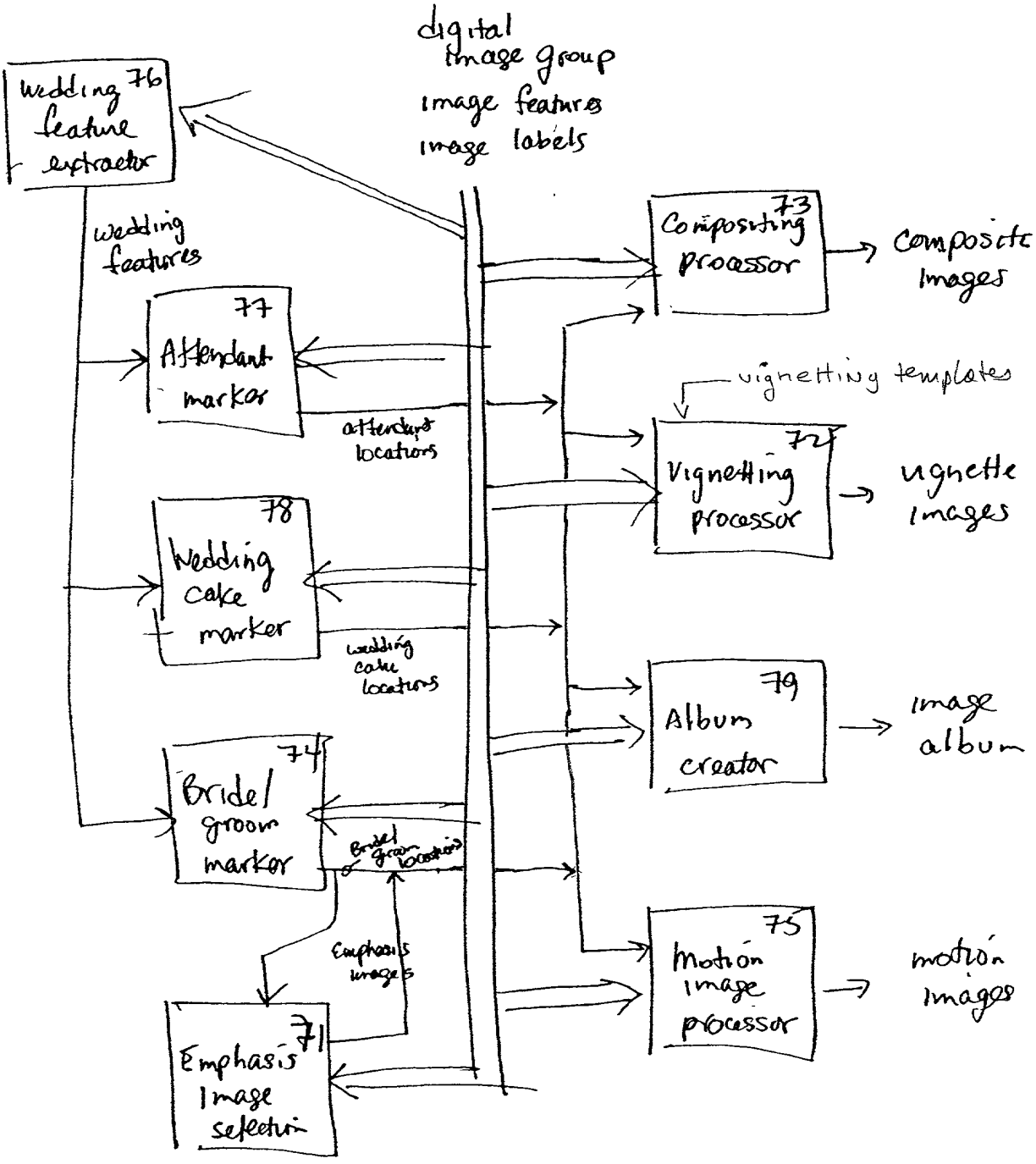
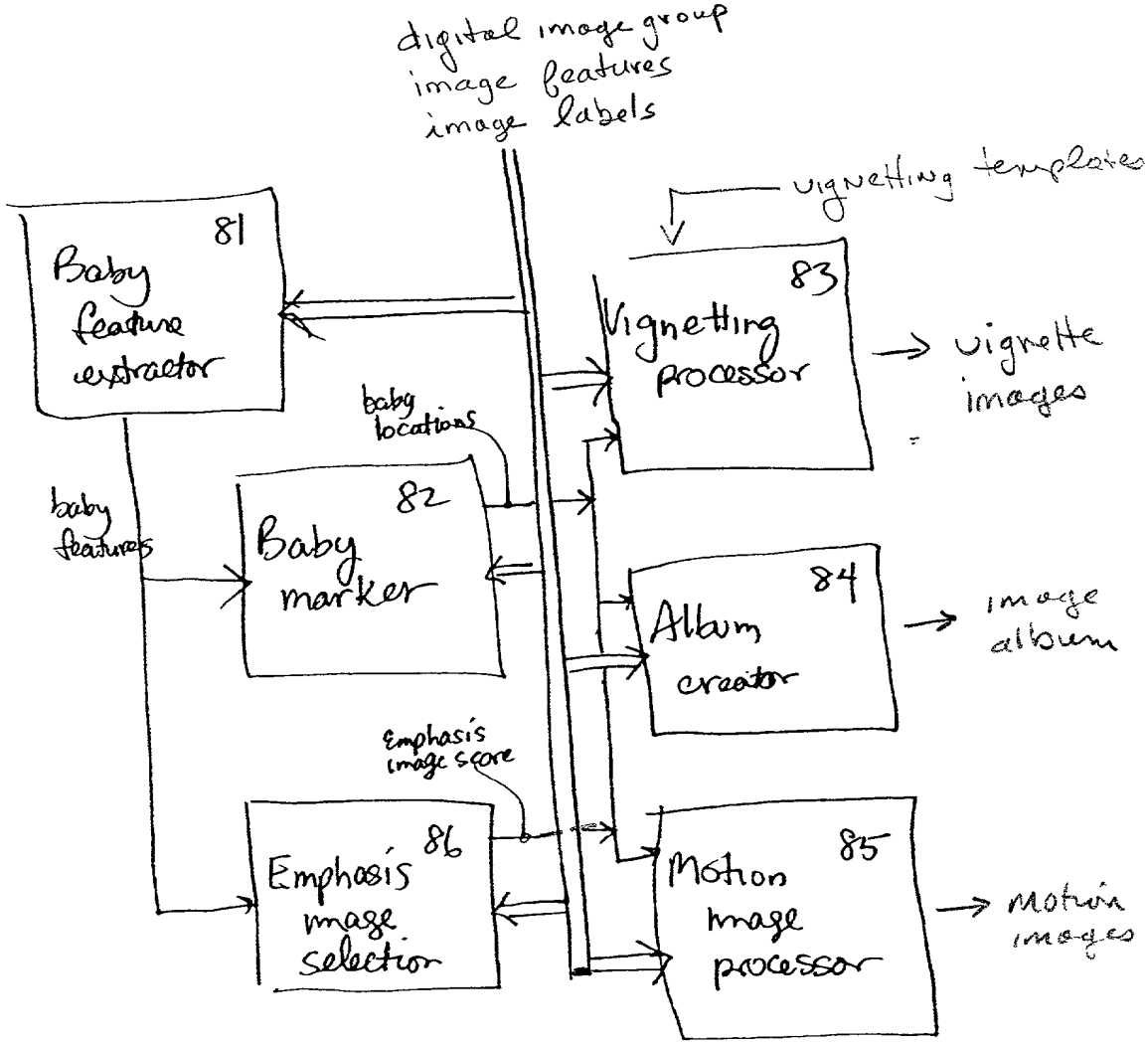

digital
Image group
image features
image labels
Wedding feature extractor 76
wedding features
77
Attendant marker
attendant locations
78
Wedding cake marker
wedding cake locations
74
Bride/groom marker
bride/groom locations
Emphasis image selector 71
emphasis images
Compositing processor 73
composite images
vignetting templates
Vignetting processor 72
vignette images
Album creator 79
image album
Motion image processor 75
motion images

Figure 2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vignetting templates
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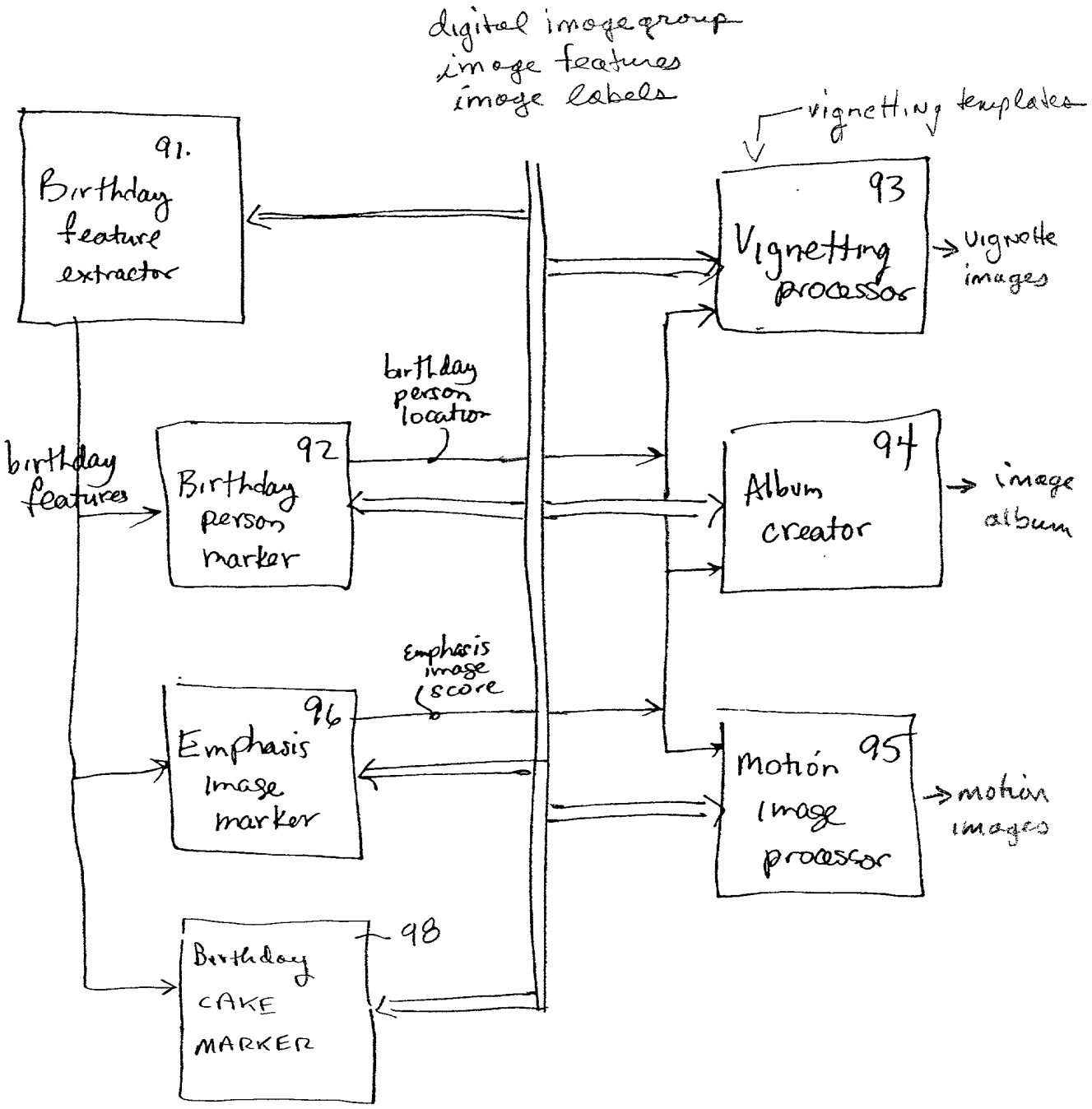
Vignetting processor
vignette images
baby locations
82
Baby marker
baby features
84
Album creator
image album
Emphasis image score
86
Emphasis image selection
85
Motion image processor
motion images

Fig. 3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Birthday feature extractor
93
Vignetting processor
vignette images
birthday person location
birthday features
92
Birthday person marker
94
Album creator
image album
emphasis image score
96
Emphasis image marker
95
Motion image processor
motion images
98
Birthday CAKE MARKER

Figure 4

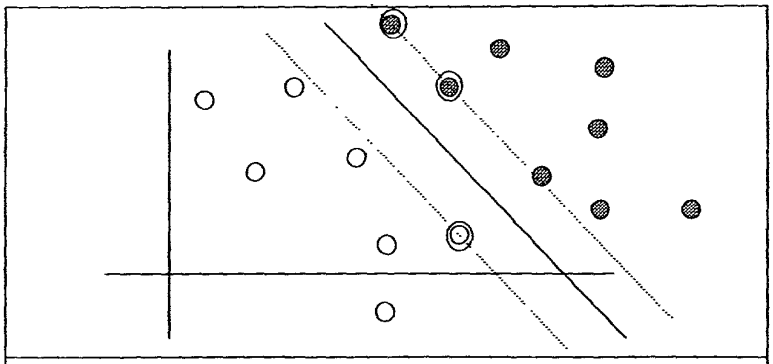

Figure 5 Linearly separable problem with hyperplane. Support vectors are circled.

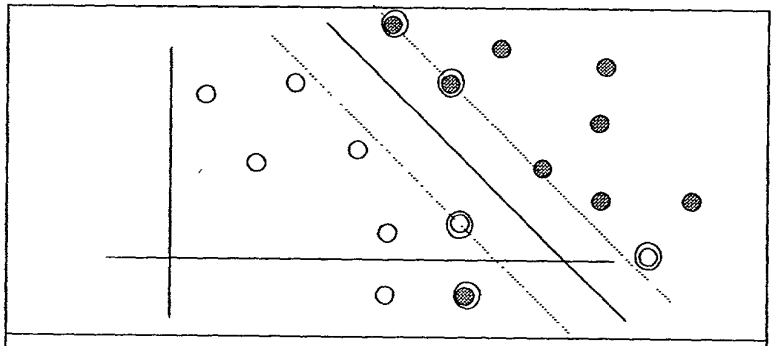

Figure 6 Linear, non-separable problem with hyperplane. Support vectors are circled. Training cases that cannot be classified correctly are automatically included among the support vectors.

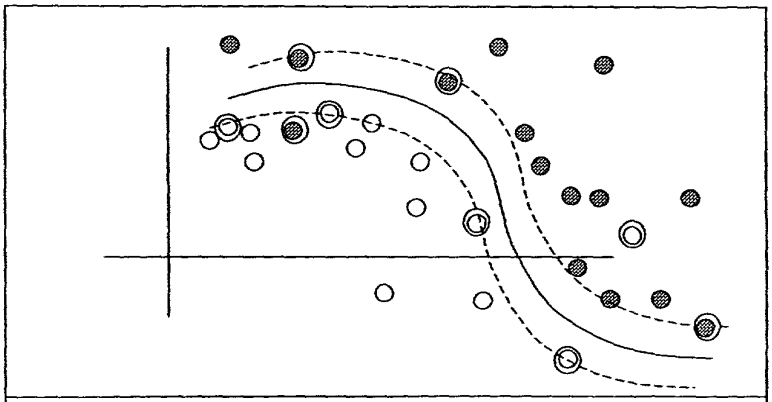

Figure 7 Non-linear, non-separable problem with classification surface. Support vectors are circled.

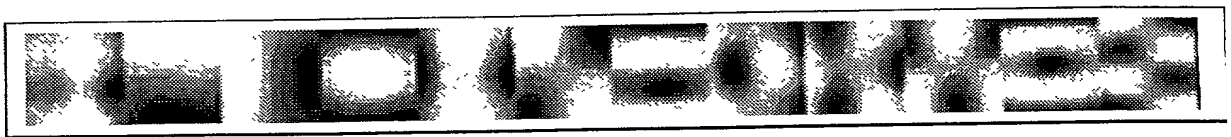

Figure 8 Principal components of face subregions.

Component	1	2	3	4	5	6	7	8	9	10	11	12
low resolution	412	306	244	172	160	138	110	109	102	95	81	83
medium resolution	420	307	235	169	157	141	114	111	98	95	81	83
high resolution	337	278	252	196	161	179	127	116	121	111	103	89

FIG. 9 Variance along principal components for sub-regions of pose 3 face images.

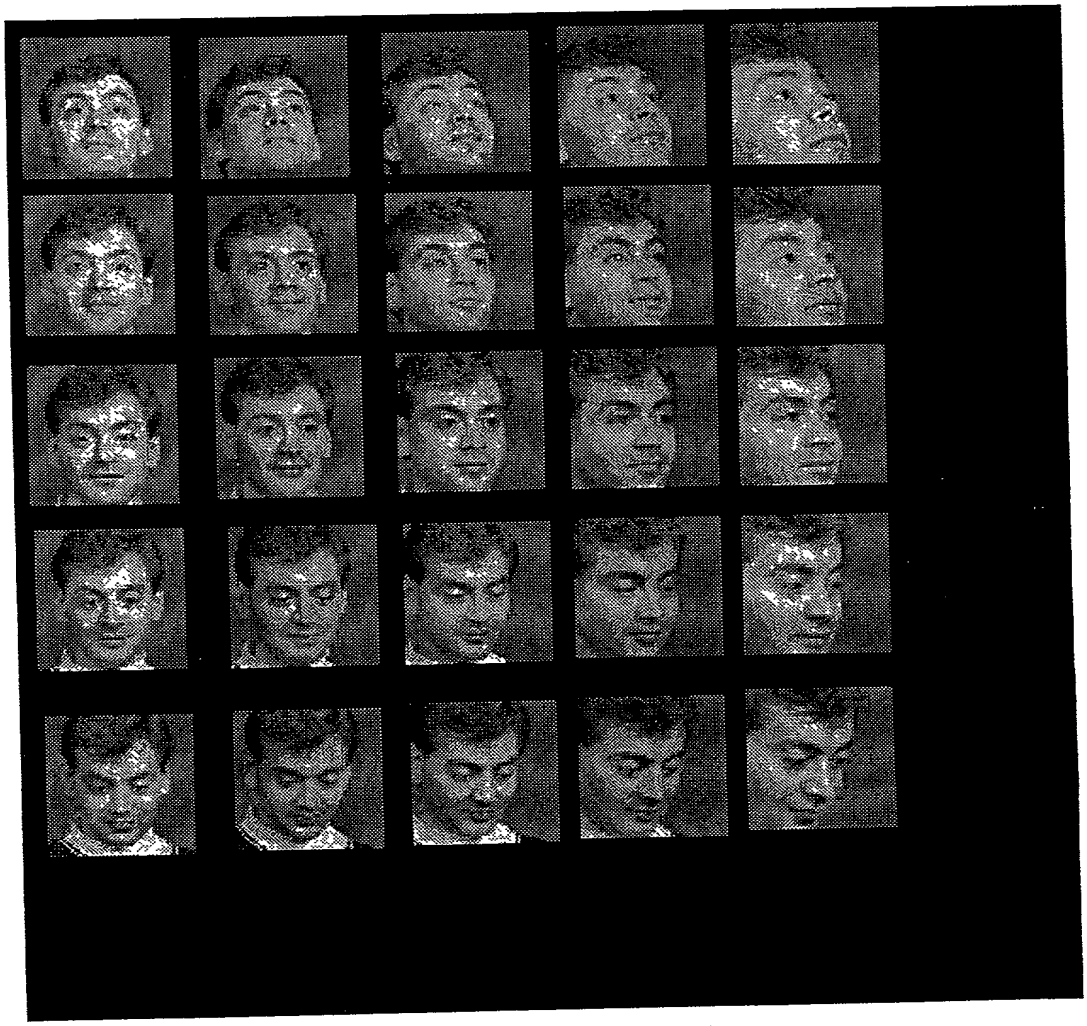

Figure 10 Face poses 1-5 (first column), 6-10 (second column), etc.

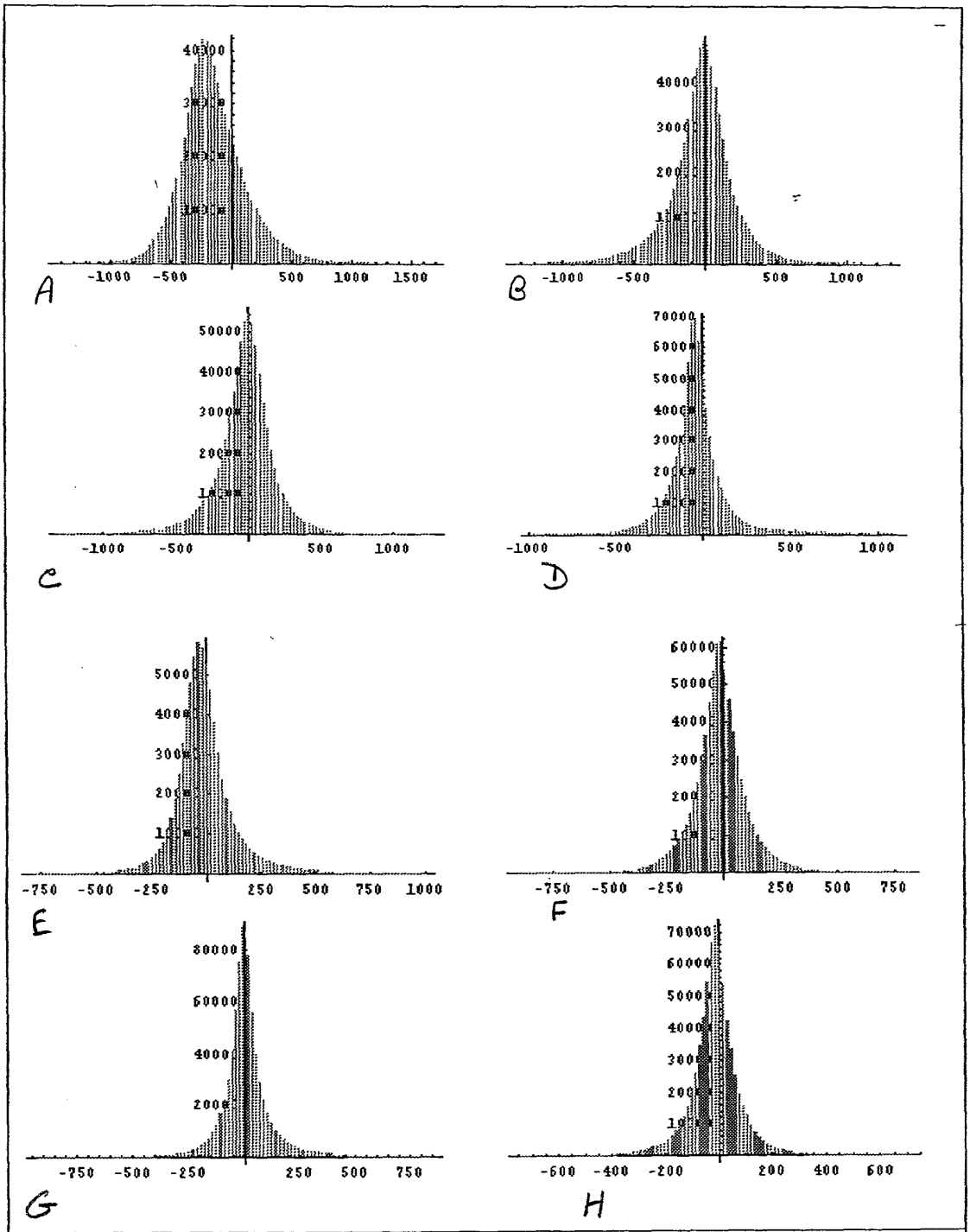

Figure 11 Distribution of quantization coefficients of first principal components.

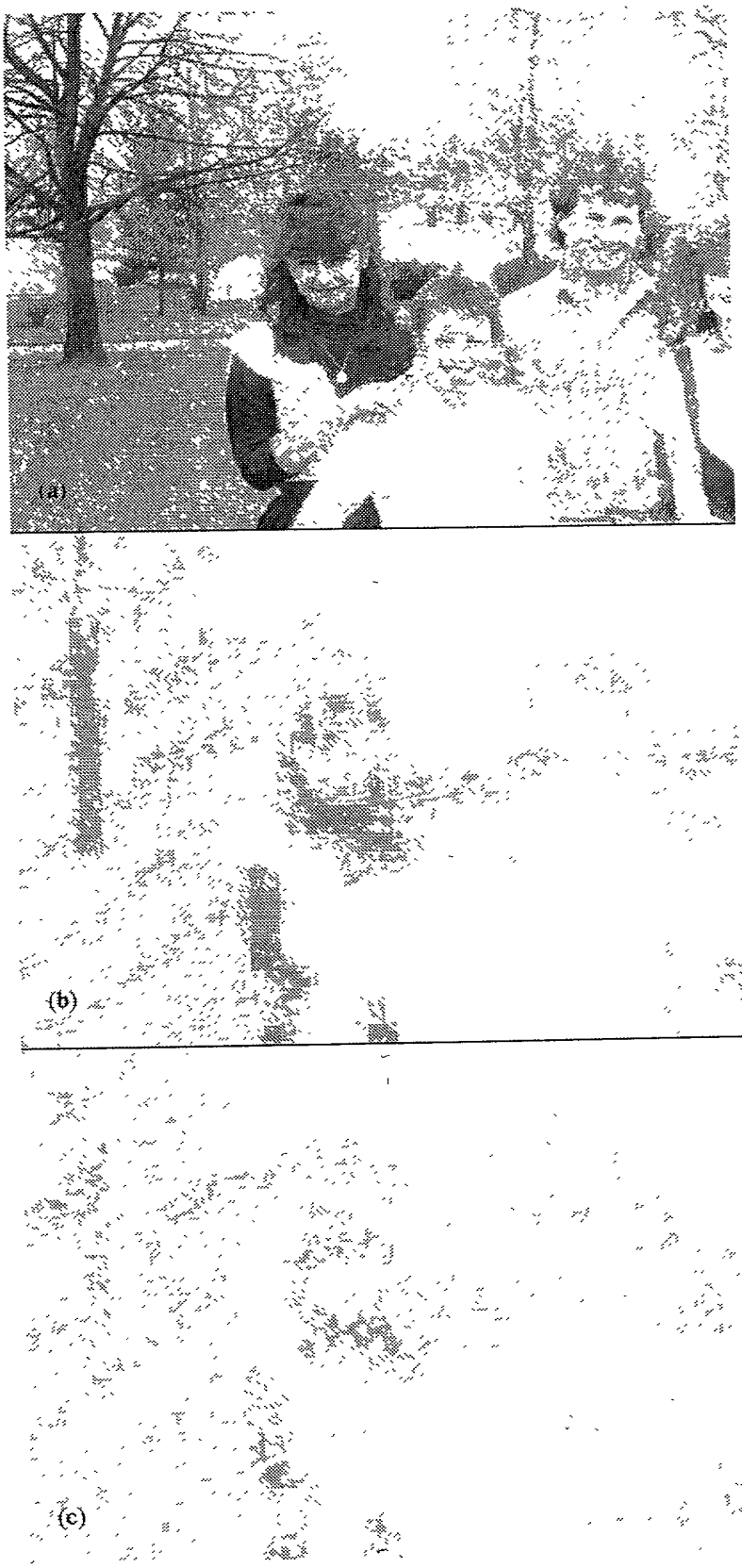

Figure 12 Sparse quantization as a method of image coding.

(a) An original image.
(b) Reconstruction from projections of subregions into twelve dimensional principal component space.
(c) Reconstruction from sparse coded and quantized version of (b).

Note that images (b) and (c) do not show all the encoded information. Rather, they shown the reconstructions from the encoding with subregions aligned with a tiled grid of 56x56 face regions. Simultaneous encodings capture further image information as the subregions are offset relative to the region grid.

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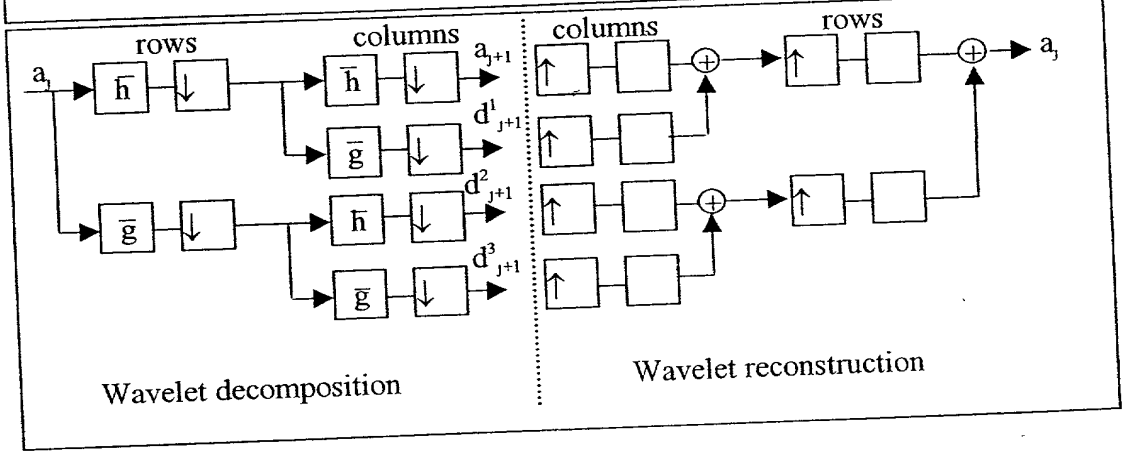
Figure 13 A face region captured at three pixel resolutions.

Figure 14 Wavelet decomposition and reconstruction in two dimensions.



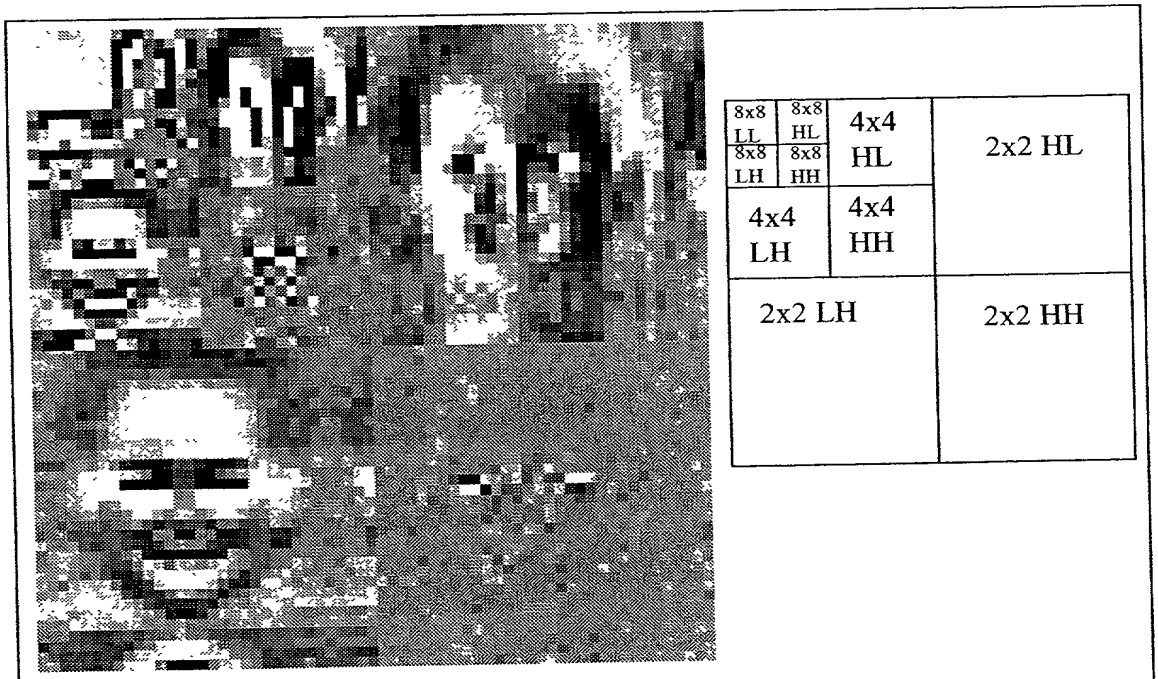


Figure 15 Wavelet transform coefficients of a face image. Length two Haar filters were used, with h=(0.7071 0.7071), g=(-0.7071, 0.7071). The legend at right identifies the wavelet support size (in full resolution pixels) and the filters used to compute the bands (e.g. HL signifies high pass horizontal, low pass vertical).

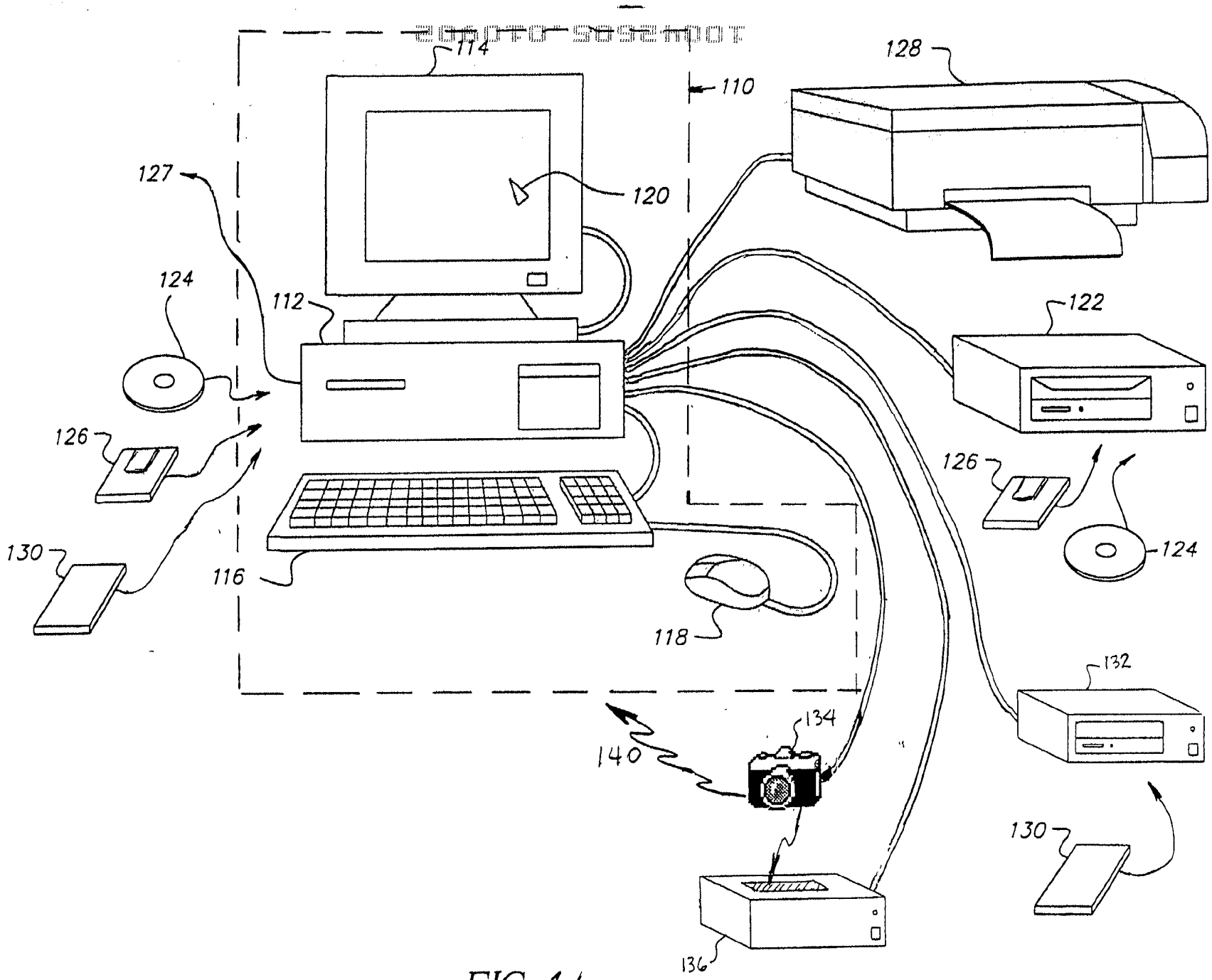

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FIG. 16

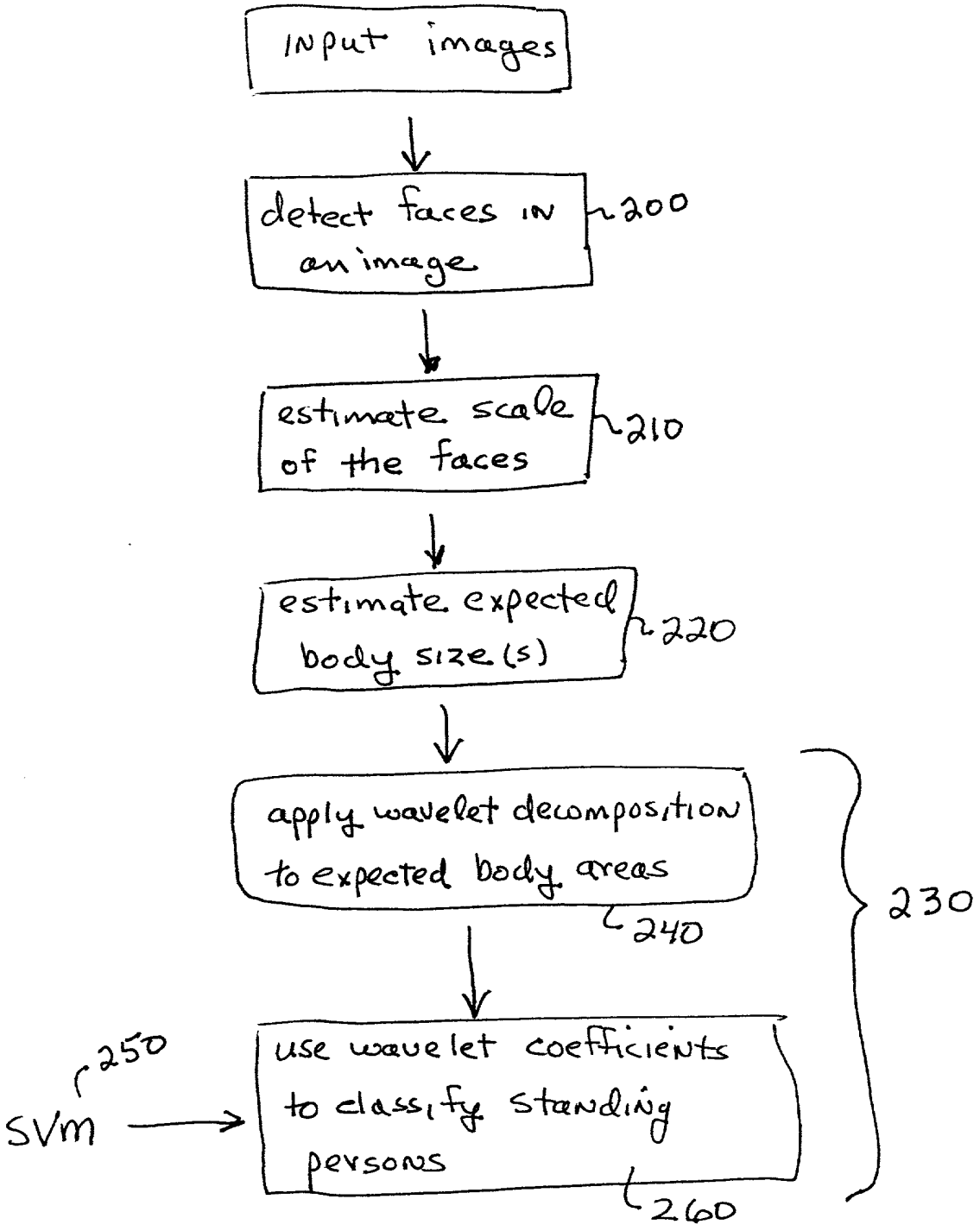
input images
detect faces in an image
200
estimate scale of the faces
210
estimate expected body size(s)
220
apply wavelet decomposition to expected body areas
240
230
use wavelet coefficients to classify standing persons
260
SVM
250

FIG. 17